

WHY STUDY COMPUTING

At Cardinal Wiseman, we provide students with a curriculum which allows them to explore various aspects of the ever developing digital world. Providing students with a solid platform at key stage 3 we provide them with a choice of IT or Computer Science. Computer science students study the design, development and analysis of software and hardware used to solve problems whereas IT students study what different technologies could be used, why they should use them and how to make best use of them

According to the Association of Computing Machinery:

"IT/Computing is one of those fields where it is almost impossible to predict what will happen next. This is why we cannot even begin to imagine all the ways that you can make a contribution to it and it can make your life's work exciting and real."

"IT/Computing jobs are among the highest paid and have the highest job satisfaction. Computing is very often associated with innovation, and developments in computing tend to drive it. This, in turn, is the key to national competitiveness. The possibilities for future developments are expected to be even greater than they have been in the past."

KEY STAGE 3 COMPUTING (YEARS 7 & 8)

In Years 7 & 8 students receive one lesson of computing per week. The curriculum is based around developing three aspects of the computing curriculum:

- Digital Literacy,
- Information Technology and
- Computer Science.

Digital Literacy is the ability to effectively, responsibly, safely create digital artefacts using a range of digital technologies.

Information Technology is concerned with how computers and telecommunications equipment work and how they may be applied to the storage, retrieval, transmission and manipulation of data.

Computer Science is the scientific and practical study of computation: what can be computed, how to compute it and how computation may be applied to the solution of problems.

Skills learnt in Year 7 & 8 include creating apps, block based programming and text based programming, computer hardware and internet safety. Learners have opportunities to build a computer virtually and in real life. They also study aspects of cybersecurity leading to opportunities to enter national competitions. When learners complete a project they present their projects by creating podcasts, short videos, animation, word processed reports and interactive presentations.

KEY STAGE 4 INFORMATION TECHNOLOGY (YEARS 9-11)

Qualification: OCR Level 1/2 Cambridge National Certificate in Information Technologies

This qualification is suitable for learners: who want to up their general IT skills and progress onto other related study, such as qualifications in IT, Digital Media, Computer Science.

What will this qualification teach the learner?

This qualification will teach the learner what different technologies could be used, why they should use them and how to make best use of them, to gather, store, manipulate and present data; this is known as data management.

They will learn about tools and techniques for use in different digital hardware and software technologies, and how these can be integrated to create digital solutions to manage and communicate data and information. They will also be taught

what data and information are and the legal, ethical and moral considerations when using technology to gather, store and present data and information, and how to mitigate the risks of cyber-attacks.

Link to exam board website: <http://www.ocr.org.uk/qualifications/vocational-education-and-skills/cambridge-nationals-information-technologies-level-1-2-j808/>

KEY STAGE 4 COMPUTER SCIENCE (YEARS 9-11)

Qualification: OCR GCSE in Computer Science (9-1)

Course Overview:

Studying computer science, students have the opportunity to learn real, in-depth understanding of how computer technology works. The course gives them an insight into what goes on 'behind the scenes' and provides excellent preparation for higher study and employment in the field of computer science.

Focus on cyber security: one of the big topics in this course is cybersecurity which looks at phishing, malware, firewalls and people as the 'weak point' in secure systems, which students will study for the first time at this level.

Content overview

Component 01: Computer systems - (50% exam)

Introduces students to the central processing unit (CPU), computer memory and storage, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.

Component 02: Computational thinking, algorithms and programming - (50% exam)

Students apply knowledge and understanding gained in component 01. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic, translators and data representation.

Programming Project

Students use OCR Programming Project tasks to develop their practical ability in the skills developed in components 01 and 02. Students code their solutions using Python or a language of their choice.

Link to exam board website: <http://www.ocr.org.uk/qualifications/gcse-computer-science-j276-from-2016/>